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(54) Title: **COATED BISCUIT**

(57) Abstract: Processes for applying a barrier coating comprising a mixture of a high-melting fat and icing sugar to a biscuit, which involves liquefying this coating and then applying it by rotating the biscuit during panning or brushing, together with products produced by one of these methods.

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COATED BISCUIT

FIELD OF THE INVENTION

5 The present invention relates to a method of preparing a coated biscuit more particularly a biscuit coated with a higher moisture component (such as caramel, jam, nougat, mallow, fondant, etc) and having a barrier coating between the biscuit and the higher moisture component.

BACKGROUND OF THE INVENTION

Biscuits, which normally contain from 1-5% moisture, coated with a higher moisture component and having a barrier coating between the biscuit and the higher moisture component are known wherein the barrier coating is usually
15 chocolate. However, the shelf life of such coated biscuits is only about 16 weeks.

SUMMARY OF THE INVENTION

We have found that the moisture migration between the dry biscuit centre
20 component and a high moisture component can be retarded when the barrier coating is an icing sugar/high-melting fat mixture which can be applied substantially uniformly using a technique involving tumbling or rotating of the biscuit centre component.

25 According to the present invention there is provided a process for preparing a biscuit coated with a higher moisture component and having a barrier coating between the biscuit and the higher moisture component characterised in that the barrier coating is a mixture of a high-melting fat and icing sugar which comprises melting the mixture of a high-melting fat and icing sugar and applying to the
30 biscuit using a technique in which the biscuit centre component is tumbled or rotated and finally contacting the biscuit coated with the barrier coating with the higher moisture component.

DETAILED DESCRIPTION OF THE INVENTION

The barrier coating may be applied to the biscuit by using panning equipment, or by rotating it between soft fibres or brushes.

5

Panning is a process well known to those skilled in the art and is described, for example, in Industrial Chocolate Manufacture and Use, Third Edition, 1999, edited by S.T.Beckett, Blackwell Science, Chapter 15, pages 287-301. Basically, panning involves a rotating container, usually a pan or a drum, containing the centres, and the coating material is then added in a form in which it can coat the outside of the centres as they tumble over one another in the container by building up multiple layers or continuous phases.

10

The soft fibers or brushes enable a substantially even coating application at control temperatures and the coating may be achieved using brushing/painting equipment such as the EMT biturbine which is based on rotating the products along two helicoidal turbines contacted with the soft fibers or brushes.

15

The present invention also provides a biscuit coated with a higher moisture component and having a barrier coating between the biscuit and the higher moisture component characterised in that the barrier coating is a mixture of a high-melting fat and icing sugar.

20

The biscuit to be coated may be any kind of biscuit or cookie, e.g. shortcake, rich tea, digestive, bourbon having a moisture content of typically from 1-5 % (Aw from 0.1 to 0.5).

25

The fat should preferably have a relatively high-melting point. The fat which should be food-acceptable is conveniently a vegetable fat having a melting point of at least 45°C, for instance from 55°C to 100°C and preferably from 60° to 90°C. The fat is preferably hydrogenated and examples of hydrogenated fats include commercially available fats such as Cessa 60 from Karlsham's, Akofine NF, Cotebar H from Loders-Crooklaan and Confao 12 from Aahrus Olie. Hydrogenated fats may be prepared by a process well-known in the oils & fats industry using hydrogen under pressure to modify the molecular structure of the fat to obtain various advantages such as higher melting point, better mouthfeel etc.

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Information about vegetable fats can be obtained in G. Talbot, Vegetable Fats, in Industrial Chocolate Manufacture and Use, 3rd Edition, 1999, edited by S.T.Beckett, p 307 -322.

5 The mixture of hydrogenated fat and icing sugar advantageously contains from 15 to 50% by weight and preferably from 25 to 35% by weight of the hydrogenated fat based on the weight of the mixture. This coating is described in an article by G Talbot in Candy Industry 1991(156 [1] p53 -56) entitled Putting a Lid on Moisture Migration. This article states that the moisture barrier is only effective if
10 the dry centre has a uniform coating. The author suggests using enrobing or spraying and notes that brushing does not work. Enrobers are however expensive and complicated machines and skilled operators are required to obtain a uniform coating particularly on the base. This type of device is known to give an uneven coating such as the « feet » shown in The Science of Chocolate by S T Beckett
15 RSC 2000, Chapter 4 Figure 4.2. Spraying is also difficult as this is normally carried out from one direction leading to a non uniform coating. The current invention provides methods which obtain a uniform coating by rotating the dry centres and can also be carried out on relatively simple standard equipment with semi-skilled operators.

20 The higher moisture component in contact with the biscuit may be a confectionery material such as caramel, jam, nougat, mallow, fondant, etc. The caramel, which may be used can contain as basic ingredients, sugar, glucose syrup, milk protein, fat, salt and from 5 to 15% water The term caramel may include toffee and
25 formulations are well known to those skilled in the art and are described, for example, in Sugar Confectionery Manufacture, Second Edition, 1995, edited by E.B. Jackson, Blackie Academic and Professional, Chapter 8 and page 289. The water activity of the caramel is preferably from 0.3 to 0.7. For clarity, it should be understood that the term "caramel" excludes products made by the breakdown of
30 carbohydrate by heat or heat and alkali treatment, which products are predominantly used as colouring materials. The jam which may be used is advantageously a confectioner's jam, advantageously with a high fruit content for the best flavour, and it usually has a solids content of above 70%, preferably from 75 to 78% and the Aw is preferably from 0.3 to 0.7. The coating with the higher
35 moisture component may be continuous or discontinuous. The coated biscuit may, if desired, be finally coated with chocolate.

After application of the barrier coating, the biscuit is then contacted with the higher moisture component, e.g. depositing the biscuit in warm caramel (between 35°C and 80°C). Because of the high melting point of the fat, it is possible to expose the coated biscuit to the warm caramel without losing the integrity of the barrier therefore the biscuit will remain crisper longer.

The shelf life at ambient temperature of biscuits traditionally coated with a chocolate barrier in contact with a higher moisture component is typically about 16 weeks. We have found that the same product coated with the high melting fat barrier according to our invention may have a shelf life of up to double this period, e.g. 32 weeks.

EXAMPLES

The following Examples further illustrates the present invention. Parts and percentages are given by weight.

EXAMPLE 1

To a shortcake biscuit comprising wheat flour, vegetable fat, sugars and raising agents there is applied a barrier coating comprising 75% Cotebar H (a fractionated, hydrogenated vegetable fat) and 25% icing sugar using a panning technique as described above. In all cases when the samples were cut in half the barrier was observed to be uniform.. Afterwards, the biscuit is deposited in warm caramel in a chocolate mould. The coated biscuit had a shelf life of 32 weeks at ambient temperature.

EXAMPLE 2

To a crunch biscuit comprising wheat flour, vegetable fat, syrup, sugars and raising agents, there is applied a barrier coating comprising 70% Cessa 60 (a hydrogenated vegetable fat) using an alternative panning such as EMT biturbine which involves rotating products along two helicoidal turbines with soft fibers enabling even coating application at control temperatures. In all cases when the

samples were cut in half the barrier was observed to be uniform. Afterwards, the biscuit is deposited in warm jam in a chocolate mould. The crunchiness of the biscuit is significantly improved over its shelflife.

CLAIMS

1. A process for preparing a biscuit coated with a higher moisture component and having a barrier coating between the biscuit and the higher moisture component
5 characterised in that the barrier coating is a mixture of a high-melting fat and icing sugar which comprises melting the mixture of a high-melting fat and icing sugar and applying to the biscuit using a technique in which the centre component is tumbled or rotated and finally contacting the biscuit coated with the barrier coating with the higher moisture component.
- 10 2. A process according to claim 1 wherein the barrier coating is applied to the biscuit by using panning equipment.
3. A process according to claim 1 wherein the barrier coating is applied to the
15 biscuit by rotating it between soft fibres or brushes.
4. A biscuit whenever prepared by a process according to any of the preceding claims.
- 20 5. A biscuit coated with a higher moisture component and having a barrier coating between the biscuit and the higher moisture component characterised in that the barrier coating is a mixture of a high-melting fat and icing sugar.
6. A biscuit according to claim 5 wherein the biscuit to be coated has a moisture
25 content of from 1 to 5% by weight.
7. A biscuit according to claim 5 wherein the high-melting fat is a vegetable fat having a melting point of from 45°C to 100°C.
- 30 8. A biscuit according to claim 5 wherein the mixture of high-melting fat and icing sugar contains from 15 to 50% by weight of high-melting fat based on the weight of the mixture.
9. A biscuit according to claim 5 wherein the high-melting fat is a hydrogenated
35 fat.

10. A biscuit according to claim 5 wherein the higher moisture component is a caramel, jam, nougat, mallow or fondant.

5 11. A biscuit according to claim 10 wherein the caramel that is in contact with the biscuit contains as basic ingredients, sugar, glucose syrup, milk protein, fat, salt and from 5 to 15% water.

INTERNATIONAL SEARCH REPORT

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A21D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, FSTA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 340 598 A (HAY JR RICHARD C ET AL) 23 August 1994 (1994-08-23) column 3, line 48-55 column 13, line 62 -column 14, line 61 column 15, line 61 -column 16, line 24 claims 1,5 ---	1-6,8-11
Y	WO 95 33386 A (GERVAIS DANONE CO ;ALABRUNE ARNAUD (FR); FUHRMANN BENOIT (FR)) 14 December 1995 (1995-12-14) page 1, line 26-35 page 3, line 8-36; claim 11; figures 4A-C ---	1-6,8-11
A	US 4 214 012 A (AINGER GEORGE E ET AL) 22 July 1980 (1980-07-22) column 5, line 37-44; example 1 --- -/--	1,7-9



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Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 820 533 A (SEABORNE JONATHAN ET AL) 11 April 1989 (1989-04-11) See whole document -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP97/01/02206

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5340598	A	23-08-1994	NONE	
WO 9533386	A	14-12-1995	FR 2720902 A AT 183890 T DE 69511768 D DE 69511768 T DK 686354 T EP 0686354 A ES 2138164 T FR 2720903 A GR 3031680 T	15-12-1995 15-09-1999 07-10-1999 20-04-2000 27-03-2000 13-12-1995 01-01-2000 15-12-1995 29-02-2000
US 4214012	A	22-07-1980	GB 1382573 A AT 337520 B AT 7872 A AU 473397 B AU 3756372 A BE 777783 A CA 956503 A CH 567369 A DE 2200461 A ES 398640 A FR 2121601 A IE 35950 B IT 1048393 B NL 7200156 A, B, SE 381554 B US 4292338 A ZA 7200057 A	05-02-1975 11-07-1977 15-10-1976 24-06-1976 05-07-1973 02-05-1972 22-10-1974 15-10-1975 10-08-1972 16-06-1975 25-08-1972 07-07-1976 20-11-1980 10-07-1972 15-12-1975 29-09-1981 29-08-1973
US 4820533	A	11-04-1989	US 4710228 A US 4810534 A	01-12-1987 07-03-1989

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